

## **University of California–Davis and Los Alamos National Laboratory Cooperative Agreement on Research and Education**

Los Alamos National Laboratory (Laboratory) and the University of California– Davis (UC Davis) share the strategic goal of strengthening University interactions to provide opportunities for research, education, recruiting, and retention. The Laboratory and UC Davis hereby enter into this Agreement to accomplish this goal.

### **Program Goals and Benefits**

UC Davis wishes to provide research opportunities for promising students and opportunities for faculty to participate in new and innovative research. Los Alamos wishes to enhance its research collaborations with universities in areas of strategic importance to the Laboratory and to provide a research environment that will encourage students to pursue technical careers, possibly at the Laboratory. The present bilateral agreement will allow both institutions to take full benefit of their overlapping strengths to build on present areas of excellence.

This cooperative agreement provides unique opportunities for scientists and engineers at UC Davis and Los Alamos to develop formal collaborations in areas of mutually beneficial research and student education. Academic interactions will help Los Alamos attract top-notch students and retain world-class scientists; that is, the program will provide a unique opportunity for students to understand and participate in the Laboratory's research programs, with a goal of providing a continuing pipeline of scientists and engineers to maintain the Laboratory's national security and science missions. UC Davis will benefit through use of Laboratory facilities, resources, and intellectual capabilities. A successful collaborative program will enhance synergy and cross-fertilization of ideas, provide solutions to scientific challenges, and develop new technologies and research areas.

### **Program Components**

The official points of contact and facilitators for this Agreement are the Vice Chancellor for Research at UC Davis and the manager for university relations in the Science and Technology Base Programs at Los Alamos. This Agreement calls for the establishment of a joint Steering Committee, which will provide intellectual direction, and management and budget oversight for the programs established under the Agreement subject to the availability of funds.<sup>1</sup> The parties anticipate that three kinds of programs will be supported through this Agreement. They are (1) student and postdoctoral scholar programs; (2) university faculty and laboratory staff programs; and (3) collaborative research programs. This document defines scope, responsibilities, and resources for the successful execution of the cooperative agreement.

### **Student Programs**

Emphasis in the student programs is on ensuring that students are placed in rewarding education/work assignments that complement both the university program and Laboratory needs. In general, students will complete their course work at UC Davis and perform research at Los Alamos at an appropriate time to be determined by the student's UC Davis major professor in concert with the Los Alamos mentor. Subject to availability of funds and approval by the Steering

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<sup>1</sup> It is the intent of Los Alamos and UC Davis that the programs and activities established under the Agreement will be funded in the manner described in the Agreement; however, whether or not it is specifically so stated elsewhere in this Agreement, financial support for all programs and activities is subject to the availability of sufficient funding and other programmatic considerations and cannot be guaranteed. (See, in particular, sections Funding and Changes to the Agreement, below.)

Committee, funding opportunities will be provided for undergraduate and graduate students, and postdoctoral researchers. There will be faculty participation and advising in both the on-campus and off-campus components of the program. UC Davis major professors and the Los Alamos mentors will monitor progress to assure that the students have a positive experience in this program. Students, mentors, and research projects will be reviewed and approved by the Steering Committee on a selective basis. The Appendix contains additional information for these pilot student programs, which the Steering Committee for the cooperative agreement will further develop. It is understood that modifications/additions to academic programs at UC Davis will follow the normal approval process from the Davis Division of the Academic Senate. It is also anticipated that funding in the form of stipends and travel support for students will be minimally equivalent to typical campus practice for equivalent positions.

**Undergraduate Programs.** The cooperative agreement offers several opportunities for undergraduate students to participate. Although the research and continuing education at Los Alamos will normally occur during the UC Davis summer session, it is possible that applicants with the advice and consent of their faculty and Laboratory mentors might decide on another appropriate time.

*The Undergraduate Student Program* will contribute to a BS degree for science and engineering students. The goal is to combine on-campus academic programs with off-campus work experiences in technical divisions at Los Alamos. Students will be eligible to participate in the program during the summer after their sophomore or junior year on campus. Specific job descriptions, qualifications, and selection criteria will be developed by the Steering Committee. In general, sophomores and juniors in good academic standing in their majors who have research interests compatible with those of Los Alamos staff will be eligible to apply for the program.

*The BS/MS Internship Program* will contribute to a BS/MS degree for science and engineering students. The program is designed principally as a joint undergraduate and graduate program leading to the simultaneous award of the BS/MS from a participating department upon successful completion of all degree requirements and completion of all work phases at the Laboratory. The goal is to combine on-campus academic programs with off-campus work experiences in technical divisions at Los Alamos. Typically, students will enter the program the summer after their sophomore year.

**Graduate Programs.** The cooperative agreement offers several opportunities for a graduate student to participate. Subject to UC Davis policies, practices, and procedures, thesis work will be supervised by a member of the department graduate research program and performed at Los Alamos. Subject to availability of funds and approval by the Steering Committee, full fellowships for doctoral dissertations may also be supported. The parties anticipate that funding support will typically include some combination of fellowship, graduate student research grant, and tuition and fee remission. Selection of graduate students and funding support will be determined through a process developed by the Steering Committee.

*Graduate Research Program.* The program may have multiple tiers to match the student education cycle (e.g., see the Appendix). For beginning graduate students, summer learning and research opportunities at Los Alamos are appropriate. As students progress in their education and define their research fields and interests, the Laboratory, subject to availability of funds, can move toward multiple-year funding commitments, for a period of one to four years. For long-term funding commitments, students will be expected to spend substantial fractions of their time at the Laboratory.

*Graduate Scholarship Program.* An annual graduate scholarship program will support PhD candidates in one of the collaborative research areas defined by the cooperative agreement.

### **Postdoctoral Programs**

Based on the availability of funding, opportunities for postdoctoral researchers to participate through this cooperative agreement will include (1) short-term visits to Los Alamos to learn valuable skills and to conduct research or (2) more extended stays to participate in collaborative research projects jointly supervised by UC Davis and Los Alamos. Selection of postdoctoral scholars will be determined by the Steering Committee, which will develop an appropriate process for this program.

### **Faculty and Staff Programs**

The faculty and staff program will enhance interactions between UC Davis faculty and Los Alamos staff, increase the participation in seminars sponsored by the two organizations, and increase their opportunities for collaborative research projects. Short-term exchanges of faculty and staff that will include seminar presentations and provide opportunities for interactions among faculty, staff, and students to discuss research projects will be encouraged and supported. The exchanges will also provide opportunities for faculty and students to discuss possible collaborative research projects.

The mentors and UC Davis major professors for students who participate in the graduate programs described above will be expected to participate in the collaborative programs. The faculty will be expected to have frequent and extended presence at Los Alamos in appropriate office space. This is essential for the communication between the two institutions and for the educational benefits of the students. Likewise, Los Alamos scientists will have frequent and extended presence on the UC Davis campus, as an essential part of fostering scientific collaborations and attracting students to Los Alamos. Support relating to this exchange of personnel will be provided according to the cooperative agreement.

Support will be provided to faculty or staff for “sabbatical” exchanges and to visiting researchers for one or more academic quarters. A visiting scholar’s program will incorporate two-way exchanges, funding UC Davis faculty to do research at Los Alamos and Laboratory staff to teach at UC Davis. An important component is adjunct professorships, subject to the same requirements and standards as those for UC Davis faculty appointments and other applicable UC Davis policies, practices, and procedures. The institutions will nominate their respective faculty or staff for these opportunities. The Appendix contains additional information for these pilot faculty and staff programs, which the Steering Committee for the cooperative agreement will further develop.

**Courses, Seminars, Workshops, and Colloquia.** Subject to the availability of funding, special-topic courses, workshops, and targeted seminar series will be established. These faculty and staff exchange programs will enhance interactions between the UC Davis faculty and Los Alamos staff, increase the participation of each in the other’s seminars, develop a better understanding of issues relevant to both institutions, and increase opportunities for collaborative research projects.

### **Collaborative Research Programs**

The Steering Committee through this cooperative agreement will establish a seed or pilot project fund to support collaborative research projects designed to attract large extramural research grants. This program will provide seed funding for projects that clearly merge and synergize research between the two institutions and that are related to topics of mutual interest. The projects will be awarded to scientists at Los Alamos and UC Davis through a selection process established

by the Steering Committee. The Steering Committee will review and decide on annual funding commitments for these pilot projects on the basis of potential for producing valuable scientific and technological innovations of mutual interest to both institutions. Any funded collaborative research programs will be subject to a separate written agreement between the parties as necessary.

### **Research Areas**

Los Alamos and UC Davis have initially identified three research areas of strategic importance to Los Alamos that will be supported under this agreement: computer science, materials science and biosciences. The Steering Committee will conduct periodic program reviews to suggest new strategic areas for collaboration to the signatories. All work performed under this agreement will be unclassified.

## **Governance**

### **Program Administration**

Los Alamos and UC Davis will select a Steering Committee composed of equal membership from UC Davis and Los Alamos. The committee will be responsible for developing the processes and procedures for the student, faculty, and staff programs within the terms of this Agreement (see Funding below), and decisions shall be made by majority vote. The Steering Committee will also conduct periodic reviews of the areas of research emphasis covered by this Agreement and may propose new areas. The Vice Chancellor for Research at UC Davis and the manager for university relations in the Science and Technology Base Programs at Los Alamos will serve as points of contact (POCs), serve as ex officio members on the Steering Committee and serve as administrators for the Agreement. The POCs responsibilities will include budget authority for their respective institutions, and adherence to Laboratory, University, and government policy, rules, and regulations. For example, the institutions will follow the appropriate UC policies to protect intellectual, scientific, or academic freedom. The committee will report annually to the signatories about the progress of the cooperative agreement. Either party may change its representatives to the Steering Committee at any time upon written notice to the other party. The UC Davis membership on the Steering Committee will consist of representatives from the Academic Senate faculty, the administration and the student body.

**Los Alamos National Laboratory.** The Laboratory's STB organization will oversee and coordinate implementation of the cooperative agreement for the Laboratory Director. The program coordinator and the cooperating Laboratory divisions or staff will be involved with the recruitment, placement, and retention of the students during the program. Administrative program fees, travel, and student issues will be the responsibility of the STB program coordinator, upon recommendation by the Steering Committee.

Technical divisions will be responsible for research assignments, training, and supervision of the students. Each student will be assigned a Laboratory mentor, who will work cooperatively with the UC Davis major professor and who will be responsible for the content and review of the student's work at the Laboratory. The Los Alamos mentor will communicate regularly with the UC Davis major professor about the student's progress and experience and will host the student's UC Davis major professor during Los Alamos visits.

**University of California–Davis.** The UC Davis Vice Chancellor for Research will be a central POC to oversee and coordinate the cooperative agreement. The program coordinator and the cooperating departments and faculty will be involved with the recruitment, placement, and retention of the students during the program.

The UC Davis POC and departments will administer the University activities necessary to support the policy, recruiting, and financial issues related to the program's operation at UC Davis. A UC Davis major professor will be selected, by mutual agreement between each student and professor, with the responsibility for interaction with the Laboratory mentor for guiding the student's research.

**Los Alamos/UC Davis Program Support.** Los Alamos and UC Davis will provide program support to recruit, matriculate, and help maintain a viable cooperative program between the two institutions. This will be done cooperatively and complementarily at both institutions through publicity and advertisement and a Los Alamos "Student Center."

### **Program Initiation**

This Agreement is effective on the date on which it is signed by duly authorized representatives of the Laboratory and the UC Davis. The Laboratory and UC Davis will designate members for the Steering Committee. The Steering Committee will develop a mutually agreed-on process for the startup and running of this Agreement: (1) student and postdoctoral programs, (2) faculty and staff programs, and (3) collaborative research programs.

### **Program Evaluation**

The Steering Committee and central coordinators will evaluate the cooperative program on an annual basis using information such as the following:

- Reports and evaluations by students and others on research projects
- Theses and dissertations supported by this Agreement
- Reports from UC Davis faculty and Laboratory staff involved in exchanges, visits, and sabbaticals
- Hires of students participating in the programs
- Reviews of the research as required by the Laboratory or UC Davis
- Proposals and applications for research grants

### **Funding**

The program established through this Agreement will be funded with UC DRD funds or other funding sources yet to be identified. Contingent upon the availability of funds and subject to approval by the respective institutions, Los Alamos will contribute \$300k per year to support the programs in this Agreement, and UC Davis will contribute at least \$15k annually for the first five years of this Agreement. Renewal of this agreement beyond five years will depend in part on each party's ability to continue its funding. Expected dollar amounts to be contributed by Los Alamos and UC Davis may be revised from time to time subject to the Agreement of Los Alamos and UC Davis, the availability of funds, and institutional approval.

### **Publication**

UC Davis will have the right, at its discretion and consistent with its tenet of academic freedom, to release information or to publish any material resulting from its performance hereunder subject to applicable laws and University of California policies, procedures, and practices. Both parties subscribe to open publication of results derived from exchanges and research performed under this agreement.

### **Intellectual Property**

Ownership of any intellectual property created in the performance of this Agreement ("Intellectual Property") will be determined in accordance with the applicable intellectual

property law and regulations and University of California and Laboratory procedures and practices consistent with the contract between the University of California and the Department of Energy for managing and operating the Laboratory. Individuals participating in research under this agreement will submit any invention disclosures simultaneously to both institutions.

### **Indemnification**

The Laboratory shall be responsible for all liability, loss, expense (including reasonable attorney's fees), or claims for injury or damages arising out of the performance of this Agreement only in proportion to and to the extent such liability, loss, expense, attorney's fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of the Laboratory, its officers, agents, or employees.

The University shall be responsible for all liability, loss, expense (including reasonable attorney's fees), or claims for injury or damages arising out of the performance of this Agreement only in proportion to and to the extent such liability, loss, expense, attorney's fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of the University, its officers, agents, or employees.

### **Changes to the Agreement**

This cooperative agreement between Los Alamos and UC Davis is intended to enhance scientific and educational programs of mutual interest to the two institutions. The Agreement is initiated as a cooperative partnership between UC Davis and Los Alamos but may be modified by them to change the programs or research areas. The Agreement may be adjusted in order to accommodate a changing environment, new guidance from UC Davis or the Laboratory, or insight gained from the ongoing interaction. The modification of any terms of this Agreement shall be made through a written amendment signed by the authorized representative of each party.

This Agreement will run for a period of five years, but may be extended by mutual consent. Los Alamos and UC Davis will evaluate this cooperative Agreement annually. Either party may terminate this Agreement at any time with 90 days notice to the other party. In the event that funding for the program is not available or that, for whatever reason the Agreement is terminated, Los Alamos and UC Davis agree that they will use their best efforts to help students and postdoctoral scientists participating in the program to secure funding so that their education and research will not be interrupted; however, neither UC Davis nor Los Alamos is responsible for securing such funding or responsible if that funding is not secured. If the Agreement is terminated, UC Davis and Los Alamos will meet in good faith to agree upon a reasonable closeout plan for funded activities that is equitable to both parties and within the spirit of this Agreement.

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John C. Browne, Director (Date)  
Los Alamos National Laboratory

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Larry N. Vanderhoef, Chancellor (Date)  
University of California–Davis

## APPENDIX

The Appendix explains the possible undergraduate, graduate, postdoctoral, faculty, and staff programs that will require further development by the Steering Committee.

### Program Components

#### Student Programs

**Undergraduate Programs.** These programs will be subject to available funding and other programmatic considerations and will operate within applicable Los Alamos and UC Davis policies and guidelines. Additional information about undergraduate programs includes the following.

Subject to the approval of the relevant UC Davis department(s), college/school Executive Committees, and Graduate Council, where necessary, the *BS/MS Internship Program* consists of three work assignments at the Laboratory. There are two three-month-long undergraduate work assignments: one after the students' sophomore year at UC Davis and one after their junior year. During the first term of the senior year or as early as the fall term of the junior year, a student applies to the department for admission to the graduate program. For those students who are accepted to the graduate program, one additional seven-month-long work assignment after the senior year is required.

Students who are accepted to the graduate program will complete a combined BS/MS thesis on a topic related to their work assignments. The thesis topic is normally determined before completion of the second work assignment. The research for the thesis will be performed primarily at the Laboratory during the third work assignment, under the combined supervision of Laboratory staff and a UC Davis faculty member.

*Student Selection:* All students will be selected through a process to be determined by the Steering Committee. Each candidate meeting the criteria established by the Steering Committee will be expected to obtain their UC Davis major professor's approval and submit a brief statement of career objectives and research interests. The Steering Committee will evaluate the applications on the basis of compatibility of the students' interests with research and educational opportunities at the Laboratory, availability of suitable Los Alamos and UC Davis faculty mentors, and the students' academic records. The Steering Committee may interview the students before determining whether an offer will be extended.

Typically, an application packet will include a review of the student's normal admission materials [grade point average (GPA) in his/her major, letters of recommendation, transcripts, etc.] and a special application addendum for the UC Davis–Los Alamos program.

For each student who has completed at least one phase of the joint UC Davis–Los Alamos program, the Steering Committee will also require a letter of recommendation from the student's UC Davis major professor, other letters of support including one from a previous Los Alamos mentor, and a project synopsis/proposal indicating what the student is interested in researching, which labs/faculty at Los Alamos

will be appropriate, etc. Some exploratory conversation with prospective Los Alamos staff by these students before their applications is strongly encouraged.

*Undergraduate Student Funding Support* in the form of a salary for each student will be paid by Los Alamos during all Los Alamos work phases. For the joint BS/MS program, students will receive tuition from Los Alamos during the final work phase when they are in residence at Los Alamos completing their BS/MS research. In addition, Los Alamos will pay for travel expenses and miscellaneous expenses in accordance with applicable DOE guidelines, Laboratory policy, and other applicable laws, regulations, and policies.

*Program Criteria* will be developed by the Steering Committee and will include criteria such as the following: (1) students will demonstrate an aptitude for research and maintain a record of high academic achievement at the University; (2) during the academic year, Laboratory mentors will maintain ongoing contact with returning students.

**Graduate Programs.** These programs will be subject to available funding and the approval of the relevant UC Davis department(s), college/school Executive Committees, and Graduate Council, where necessary. They will operate within applicable Los Alamos and UC Davis policies, practices, and guidelines. The program may have three tiers to match the student education cycle.

*Tier I* will provide summer research opportunities for entering graduate students. This program will be restricted to a few select students with appropriate undergraduate preparation and a clear focus on research direction. The students will receive a stipend and travel support from Los Alamos for the summer before enrolling in graduate classes. Although not yet enrolled in the graduate school, incoming graduate students can be hired with the title of Graduate Student Researcher (GSR) for the summer if they have been admitted for the following fall quarter.

*Tier II* will provide summer research opportunities for graduate students between their first and second years at UC Davis. This program will help students explore and foster research collaborations between faculty at UC Davis and at Los Alamos. The students will consider joint thesis research projects, for which Los Alamos will fund stipend support and travel.

*Tier III* will provide opportunities for extended stays at Los Alamos for graduate students in either the MS or PhD track. For MS students, selection to Tier III will require that each student spend one or more quarters of research time at Los Alamos completing a master's thesis with a sponsoring Los Alamos staff member, who will be appointed as a member of the student's thesis committee. For PhD students, selection to Tier III will require that each student be advanced to candidacy and spend one or more quarters of research time at Los Alamos completing a doctoral dissertation with a sponsoring Los Alamos staff member, who, subject to UC Davis policies, procedures and practices, will be appointed as a member of the student's dissertation committee. For these students, funding support by Los Alamos will typically include some combination of fellowship, GSR stipend, travel, and miscellaneous expenses; tuition remission will be funded by UC Davis.

*Selection Process.* All students will be selected by the Steering Committee, which will develop an application packet for each tier. Typically, for Tier I students this will include a review of the student's normal admission materials [graduate record exam (GRE) score, GPA in his/her major, letters of recommendation, transcripts, etc.] and a special application addendum for the UC Davis-Los Alamos program. For Tier II selection, the Steering Committee will also require a letter of recommendation from the student's faculty sponsor, other letters of support, and a project synopsis/proposal indicating what



the student is interested in researching, which labs/faculty at Los Alamos will be appropriate, etc. Some exploratory conversation with prospective Los Alamos staff by these students before their applications is strongly encouraged. Tier III selection will require all of the above, as well as a letter of support from the Los Alamos faculty member who will serve as the thesis/dissertation sponsor of the student while he/she is at Los Alamos.

*Graduate/Postdoctoral Student Funding Support.* As established by the Steering Committee students will receive a salary from the Laboratory during all Los Alamos work phases. In addition, the Laboratory will pay for travel expenses and miscellaneous materials while the student is at Los Alamos. Los Alamos will fund stipends for GSRs; fees and nonresident tuition remission will be supported by UC Davis.

**NOTE:** For the student programs, there are two or more options for paying students' salaries and benefits while they are at Los Alamos for an extended period, for example: (1) pay them through the campus, that is, a campus salary and the campus benefits, or (2) pay them at the appropriate Los Alamos undergraduate or graduate student wage. The choice might be different for the undergraduate student, the graduate student, or the postdoctoral scholar, and it may depend on the length of time they are at Los Alamos. UC Davis and Los Alamos, through the Steering Committee, will need to resolve the student pay and benefits issue in accordance with appropriate policies. Los Alamos will pay for travel expenses and miscellaneous expenses in accordance with applicable DOE guidelines, Laboratory policy, and other applicable laws, regulations, and policies.

**Faculty Opportunities.** Faculty visiting Los Alamos will have a sponsoring staff member and division. The length of faculty visits may be several days, an academic quarter, a summer, or an entire academic year as a sabbatical. The faculty member through the appropriate UC Davis department will propose to the Steering Committee details of support, length of time, etc., that will be required.

*Visiting UC Davis Scholars.* UC Davis faculty will be funded to do research and collaborate with Laboratory scientists during summer terms and sabbaticals. Faculty visiting the Laboratory may be visiting staff members, visiting scholars, professors-in-residence, or a similar position. A visiting faculty member will have a Laboratory host and a point of contact (POC). The Steering Committee will review and recommend details of support for visiting UC Davis scholars.

**Faculty/Staff Opportunity—Joint Professorships.** A jointly funded faculty chair may be established on the recommendation of the Steering Committee for approval by Los Alamos and the deans of the participating departments. A joint professorship appointee would be expected to conduct research at both institutions with teaching assignments at UC Davis.

**Staff Opportunities.** A Laboratory staff member visiting UC Davis will have a sponsoring faculty member and department. The length of the staff visits may be several days, an academic quarter, a summer, or an entire academic year as a sabbatical. The staff member, through the Laboratory, will propose to the Steering Committee details of support, length of time, etc., that will be required.

*Adjunct Professors.* Laboratory scientists and engineers may be selected to teach courses and co-supervise UC Davis graduate students. Los Alamos staff who teach at UC Davis will be eligible for faculty appointments at a suitable level in the University of California system. Adjunct professorships will be granted on a selective basis and will be a recognized career path for Laboratory scientists. For these faculty positions, Los Alamos will select a few staff and nominate them to UC Davis for consideration.

*Visiting Laboratory Scholars.* All staff visiting UC Davis as other than Adjunct Professors will be appointed at an appropriate UC Davis academic or staff title. A visiting staff member will have a UC Davis host and a POC. Laboratory staff will be funded to do research and collaborate with UC Davis scientists for periods from a few months up to one year.

Los Alamos will develop procedures for reviewing and nominating Los Alamos staff for appointments in the appropriate UC Davis title series and for periodic review and renewal of these appointments. The appointments of Adjunct Professors will then be subject to the same requirements and standards as are other faculty appointments, as required by UC Davis administration. The type and level of appointments will be determined after consultation with the University Committee on Academic Personnel, the Executive Vice Chancellor, and other appropriate authorities.